

# Recovery Plan Action Status

**Plan Name: Walker's Manioc (Manihot walkerae) Recovery Plan**

**Plan Status: Final**

**Plan Date: 12-Dec-93**

**Lead Agency: USFWS**

**Lead Office: Corpus Christi Ecological Services Field Office**

**(361-994-9005)**

Species	Action Priority #	Action #	Action Description	Action Status	Est. Initiation Date	Est. Completion Date	Responsible Parties	Work Type	Labor Type	Action Comments
Walker's manioc (Manihot walkerae)	1	111	Inform and educate landowners	Ongoing Current	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, USFWS Regional Office 2	Other: Information and Education	Species Expert	TPWD used Section 6 funds to contract species experts to do landowner contact.
Walker's manioc (Manihot walkerae)	1	112	Encourage the establishment of stewardship agreements	Ongoing Current	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, Ecological Services Division, The Nature Conservancy, Lower Rio Grande Valley National Wildlife Refuge, Texas Land Steward Society	Management: General	Internal Technical Assistance, Species Expert	Year 4 and 5 two thousand. Between 2002 and 2006, 20 private LO signed Voluntary Conservation Agreements (VCA) however, only one included W.manioc. In Mexico, Pronatura Noreste has two conservation agreements with LO in Tamaulipas. As of 2009, three populations are protected on tracts of LRGV NWR, a LO conservation agreement was signed for a private ranch in TX, and one population is managed by TxDOT on the ROW.
Walker's manioc (Manihot walkerae)	1	121	Determine landowner short-term and long-term land use goals	Unknown	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, Other parties, The Nature Conservancy, Universidad Autónoma de Tamaulipas, Universidad Nacional Autónoma de Mexico, USFWS Regional Office 2	Management: Land Use	Species Expert	ES costs = 2K/year. UNAM/UAT or other and/or TNC costs = 2K/year.

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Walker's manioc (Manihot walkerae)	1	122	Develop and implement management plans for known sites.	Ongoing Current	FY 2000 - FY 2004		U.S. Fish and Wildlife Service, Ecological Services Division, USFWS Regional Office 2	Management: Planning	Species Expert	Year 4 and 5 also five thousand.
Walker's manioc (Manihot walkerae)	1	123	Develop a monitoring program with landowner association.	Unknown	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, Other parties, Universidad Autónoma de Tamaulipas, Universidad Nacional Autónoma de México, USFWS Regional Office 2	Management: Planning	Species Expert	ES costs = 5K/year. Year 4 and 5 also total five thousand. Other (through ES, PVT)
Walker's manioc (Manihot walkerae)	1	13	Enforce applicable laws and regulations	Ongoing Current	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, U.S. Fish and Wildlife Service, Law Enforcement Division, Texas Parks and Wildlife Department, USFWS Regional Office 2	Other: Law Enforcement, Other: Regulations	Internal Field Assistance	ES costs = 1.25K/year. LE costs = 0.25K/year. TPWD costs = 0.5K/year.
Walker's manioc (Manihot walkerae)	1	211	Study soils and underlying geology	Unknown	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, Other parties, Universidad Autónoma de Tamaulipas, Universidad Nacional Autónoma de México, Lower Rio Grande Valley National Wildlife Refuge, USFWS Regional Office 2	Research: Habitat Requirements	Contract, Internal Field Assistance	ES costs: FY1 = 1K, FY2&3 = 0.5K/year. Priority 1 because this information is not known. Parties: ES, UNAM/UAT or other (through ES). Field notes from 1995 from La Puerta tract in LRGV NWR found that plants are on shallow to moderately shallow sandy caliche soils.
Walker's manioc (Manihot walkerae)	1	212	Determine community structure	Partially Complete	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, Other parties, Universidad Autónoma de Tamaulipas, Universidad Nacional Autónoma de México, USFWS Regional Office 2	Research: Habitat Requirements, Research: Habitat Status	Species Expert	Priority 1 because this information is not known. ES costs: FY1 = 10K, FY2&3 = 3K/year.

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Walker's manioc (Manihot walkerae)	1	2131	Study response to past land use practices	Unknown	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, Other parties, Universidad Autónoma de Tamaulipas, Universidad Nacional Autónoma de México, USFWS Regional Office 2	Research: Other Information	Species Expert	Priority 1 because this information is not known. All costs are ES.
Walker's manioc (Manihot walkerae)	1	2132	Study response to fire	Unknown	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, Other parties, Universidad Autónoma de Tamaulipas, Universidad Nacional Autónoma de México, USFWS Regional Office 2	Research: Other Information	Species Expert	Priority 1 because this information is not known. All costs are ES
Walker's manioc (Manihot walkerae)	1	2133	Study interactions with other species (beneficial and negative).	Unknown	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, Other parties, Universidad Autónoma de Tamaulipas, Universidad Nacional Autónoma de México, USFWS Regional Office 2	Research: Demographic Studies	Internal Field Assistance, Species Expert	Priority 1 because this information is not known. All costs are ES. Common invasive grasses include buffelgrass and is present at most W.manioc sites. Pitted bluestem may also compete with Walker's manioc (C.Best 2005).
Walker's manioc (Manihot walkerae)	1	2134	Study response to periodic freezing temperatures	Unknown	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, Other parties, Universidad Autónoma de Tamaulipas, Universidad Nacional Autónoma de México, USFWS Regional Office 2	Research: Habitat Requirements	Species Expert	Priority 1 because this information is not known. All costs are ES.

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Walker's manioc (Manihot walkerae)	1	221	Do a demographic analysis of populations with demographic structure	Unknown	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, Other parties, Universidad Autónoma de Tamaulipas, Universidad Nacional Autónoma de México, USFWS Regional Office 2	Research: Demographic Studies	Species Expert	Priority 1 because this information is not known. All costs are ES.
Walker's manioc (Manihot walkerae)	1	222	Characterize phenology	Unknown	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, Other parties, Universidad Autónoma de Tamaulipas, Universidad Nacional Autónoma de México, USFWS Regional Office 2	Research: Other Information	Species Expert	Priority 1 because this information is not known. All costs are ES.
Walker's manioc (Manihot walkerae)	1	223	Determine the primary means of reproduction in the wild	Unknown	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, Other parties, Universidad Autónoma de Tamaulipas, Universidad Nacional Autónoma de México, USFWS Regional Office 2	Research: Propagation	Species Expert	Priority 1 because this information is not known. Other (through ES)
Walker's manioc (Manihot walkerae)	1	224	Study pollination biology and determine pollination requirements	Unknown	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, Other parties, Universidad Autónoma de Tamaulipas, Universidad Nacional Autónoma de México, USFWS Regional Office 2	Research: Propagation	Species Expert	Priority 1 because this information is not known. All costs are ES.

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Walker's manioc (Manihot walkerae)	1	225	Study seed production and dispersal	Unknown	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, Other parties, Universidad Autónoma de Tamaulipas, Universidad Nacional Autónoma de México, USFWS Regional Office 2	Research: Propagation	Species Expert	Priority 1 because this information is not known. All costs are ES. A 1993 Cooperative Agreement with USFWS and the Universidad Nacional Autónoma de México (UNAM) to conduct preliminary reproductive biology, reproductive work on at least one Mexican population, and prepare a report; unaware that we ever received this report.
Walker's manioc (Manihot walkerae)	1	226	Study seedling recruitment	Unknown	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, Other parties, Universidad Autónoma de Tamaulipas, Universidad Nacional Autónoma de México, USFWS Regional Office 2	Research: Propagation	Species Expert	Priority 1 because this information is not known. All costs are ES.
Walker's manioc (Manihot walkerae)	1	23	Study cultivation requirements	Unknown	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, Other parties, Center for Plant Conservation, USFWS Regional Office 2	Research: Propagation	Species Expert	Priority 1 because this information is not known. ES costs = 2.5K/year. CPC or other costs = 2.5K/year.

Species	Action Priority #	Action #	Action Description	Action Status	Est. Initiation Date	Est. Completion Date	Responsible Parties	Work Type	Labor Type	Action Comments
Walker's manioc (Manihot walkerae)	1	3	Search for new populations	Ongoing Current	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, Other parties, The Nature Conservancy, Texas Parks and Wildlife Department, Universidad Autónoma de Tamaulipas, Universidad Nacional Autónoma de México, USFWS Regional Office 2	Research: Population Surveys	Internal Field Assistance, Species Expert	Year 4 and 5 also six thousand. ES costs = 5K/year. TPWD costs = 1K/year. In 2002, FWS, TNC, and TPWD did a survey of a 1200-acre ranch in Duval County and found a new unreported population. In April 2005, evaluation of ranch in Tamaulipas, Mexico reported large population (Arquieta Final Report). In FY08, DHS contractors surveyed for the presence of manioc along route of proposed border fence.
Walker's manioc (Manihot walkerae)	1	4	Establish a botanical garden population	Unknown	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, Other parties, Center for Plant Conservation, USFWS Regional Office 2	Management: Propagation, Research: Propagation	Species Expert	Year 4 and 5 also total three thousand. ES costs = 1K/year. CPC costs = 2K/year. In 1994, a Cooperative Agreement with the SABG to establish refugia for species.
Walker's manioc (Manihot walkerae)	2	51	Appoint a working team to help plan and oversee the reintroduction program	Ongoing Current	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, USFWS Regional Office 2	Management: Planning	Internal Technical Assistance, Species Expert	Year 4 and 5 also four thousand. A South Texas Plant Recovery Team was appointed in summer 2010.
Walker's manioc (Manihot walkerae)	2	53	Propagate plants for reintroduction.	Unknown	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, Other parties, Center for Plant Conservation, Lower Rio Grande Valley National Wildlife Refuge, USFWS Regional Office 2	Management: Propagation, Research: Propagation	Species Expert	Year 4 and 5 also total eight thousand. ES costs = 3K/year. LRGVNR costs = 5K/year. Seeds from La Joya plant and from the SABG - the gene pool was too small for long-term population survival.

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Walker's manioc (Manihot walkerae)	2	54	Experimental pilot project at suitable site	Unknown	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, Other parties, The Nature Conservancy, Texas Parks and Wildlife Department, Lower Rio Grande Valley National Wildlife Refuge, USFWS Regional Office 2	Management: Propagation, Management: Reintroduction	Species Expert	ES costs = 5K/year. LRGVNR costs = 5K/year. TPWD, TNC or other costs = 2.5K/year.
Walker's manioc (Manihot walkerae)	3	55	Establishment of reintroduced populations on suitable site	Ongoing Current	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, Other parties, The Nature Conservancy, Texas Parks and Wildlife Department, Lower Rio Grande Valley National Wildlife Refuge, USFWS Regional Office 2	Management: Propagation, Management: Reintroduction	Species Expert	Year 4 and 5 also total eight thousand. ES costs: FY1&2 = 3.5K/year, FY3 = 2K. LRGVNR costs: FY1&2 = 8K/year, FY3 = 4K. TPWD, TNC or other costs: FY1&2 = 3.5K/year, FY3 = 2K. In FY08, 7 manioc plants were rescued from a building site and are being kept by LRGV at its nursery facility - the refuge is creating a refugium garden for the plants.
Walker's manioc (Manihot walkerae)	2	56	Monitor reintroduction populations	Unknown	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, Other parties, The Nature Conservancy, Texas Parks and Wildlife Department, Lower Rio Grande Valley National Wildlife Refuge, USFWS Regional Office 2	Research: Population Surveys	Internal Field Assistance, Species Expert	Year 4 and 5 also total six thousand. ES costs = 3K/year. LRGVNR costs = 2K/year.
Walker's manioc (Manihot walkerae)	3	6	Develop a public information and awareness program	Unknown	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, Texas Parks and Wildlife Department, USFWS Regional Office 2	Other: Information and Education	Internal Technical Assistance	ES costs = 1K/year. TPWD costs = 0.5K/year